IoT-based Framework for Coordinating Smart Home

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Abstract - *IOT RFID Door Open Notification for Homestay is a system that focuses on the use of RFID as a door lock and keeps track the database of Homestay's guest check-in and check-out time data. By implementing this project, the homestay owner can view and update the check-in and check-out time of their guest whenever required. MySQL will be used in this project for database support and logging the Homestay Web-based System. In this paper, a new framework with Radio Frequency Identification technology (RFID) applied to homestay door lock is exposed. In order to validate the designed framework, an experiment to configure the speed capture by the RFID reader was carried out.*

Keywords: Homestay, RFID, Radio Frequency Identification.

1 Introduction

Internet of Things home automation has rapidly increased and become a world trend global companies such as Google and Amazon take the opportunity of this growing market by innovating and producing various IoT based products for example Google Home and Amazon Alexa. According to (Patel, 2020), the global market for smart home automation is expected to reach $40 billion by 2020 with many functions to offer, not only to reduce the cost and energy but also increase the productivity since these devices are interconnected. Nowadays smart home services are not limited to be applied to a home for a basic function but also commercialize and widely entering the accommodations market.

The conventional method such as manual booking system or energy resources management are still being used nowadays however for a grown-up business for example a big company, these methods are not relevant thus IOTs implementation can be a medium to solve the problems. In this paper, IoT-based Framework for Coordinating Smart Home is proposed and apply on Homestay. Ramaraj et al. (2019) in his thesis has conducted over 100 sample of surveys to analyze the reasons people choosing Homestay which resulted to "authentic socio-cultural experience", "security and warmth of the home", "economic and cheap price", "environmental preservation" and "Educational knowledge".

While hotels provide front counters, Homestay uses different approaches to coordinate the check-in and check-out details with the host and communication is vital to make sure the house or room booking is reserved. Homestay hosts usually will exchange the homestay keys in person, leave them in a lockbox, or let a neighbor meet a visitor and time-consume to secure the booking increases. In this paper, RFID tags will be used to unlock the door replacing the conventional method. IOT RFID Door Open Notification for homestay is a system that focuses on integrating RFID with the door lock to keep track of the database of homestay's guest check-in and check-out time data. The proposed system requires the RFID tag to be registered in a web-based system first to allow the user to use the tag. Installation of RFID Tag Reader that is connected to Wi-Fi is needed in order to transmit in real-time information of check-in and check-out time of the homestay guest. This paper, Section II presents the related works in IoT. In Section III, this paper will present the proposed framework of homestay based on RFID. Section IV presents the experimental settings, results and analysis based on the case study. Finally, the conclusion and the future work are presented in Section V.